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*logged in  
2/13/81*

February 3, 1981

RECEIVED

FEB 09 1981

E.P.A. — D.L.P.C.  
STATE OF ILLINOIS

Mr. Thomas E. Cavanaugh, Jr., Manager  
Residual Management Section  
Division of Land/Noise Pollution Control  
Illinois Environmental Protection Agency  
2200 Churchill Road  
Springfield, Illinois 62706

SUBJECT: SUPPLEMENTAL COMMENTS REQUESTED FOR  
REAPPLICATION FOR PAP SITE DEVELOPMENT  
PERMIT: D.E.MATSCHKE COMPANY FILE NO.1042.001

Dear Mr. Cavanaugh:

The January 9, 1981 letter transmitting the Process Alliance Partnership (PAP) experimental permit contained a number of special conditions. The purpose of this letter is to address these special conditions so as to supply the supplemental information requested by IEPA in order to qualify PAP Joliet for a site permit.

The PAP responses are provided below in an objective style corresponding to the format used for outlining the special conditions and comments cited in the experimental permit.

Special Conditions 1 and 2 PAP concurs.

Special Condition 3 PAP concurs. An IEPA permit (Permit No. 1980-EA-0827) was issued June 26, 1980 for a Process discharge to the Joliet Sanitary Sewer System from the PAP Joliet facility.

Special Condition 4 PAP concurs.

Special Condition 5 PAP requests a re-evaluation. PAP is obligated by contract to accept up to 35,000 gallons per day from Northern Petrochemical Company (NPC). During an occasional operating change at NPC, PAP, at NPC request, has received as much as 50,000 gallons per day. During typical day-to-day operation PAP receives 20,000 to 30,000 gallons per day from NPC. In view of the fact that PAP has 170,000 gallons of installed storage capacity and has a recently demonstrated processing capacity of in excess of 60,000 (NPC) gallons per day, PAP hereby requests consideration for a maximum limitation in keeping with PAP capabilities and occasional needs.

Special Conditions 6, 7 and 8 PAP concurs.

Notification sent  
for D.L.P.C. (Per 13910)

FEB 10 1981

DL/NPC

Special Comment a A continuous clay berm has been installed along the north property line, beginning at the northeast corner of the PAP building and extending to the concrete sea-wall at the northeast corner of the PAP property. Berm height ranges from 1&1/2 feet near the PAP building to 3 feet at the sea-wall. Surface topography, as noted in Exhibit 2, Page. 26 of the original site-permit application, directs PAP site runoff to the east and to the north. Thus any PAP spillage would be retained on PAP property in a shallow pool bounded by the clay berm and the concrete sea-wall. Inasmuch as the clay berm intercedes a major stormwater-runoff flow path, a metal conduit and sluice-gate has been installed in the berm in the vicinity of the sea-wall to allow drainage of the stormwater pool that will form at this location following significant precipitation events. The berm will be covered with crushed limestone as a protection against stormwater erosion.

Special Comment b There are seven indoor processing tanks shown on the original site-permit application plan sheets (Exhibits 1, 2, 4 and 5; Pages 26 and 27). The two tanks situated along the south wall of the building (the lower building wall on the plan sheets) each have a capacity of 11,000 gallons. The remaining five tanks, located along the east and north walls of the building, each have a capacity of 5,000 gallons.

Special Comment c Basis for waste balance is 25,000 gallons of spent caustic aqueous solution received per day or 175,000 gallons per week. Other reactants include 31,000 gallons per week of spent pickle liquor and 1,000 gallons per week of virgin acid in the present version of the PAP - Joliet process. Weekly products include 196,000 gallons of treated effluent to the City of Joliet Municipal Treatment System, 42 cubic yards of 30 to 40 per cent solid dewatered filter-cake to an IEPA approved landfill and 500 to 1,000 gallons of hydrocarbon oil reclaimed and sold to oil reproprocessors. PAP capacity for spent caustic aqueous solution via this route is in excess of 420,000 gallons per week of spent caustic.

Special Comment d The responses to Item 28 were understood to apply to the proposed facility which was being constructed at the time the site-permit application was originally filed. The responses to Item 28 applied, in part, at the time of original filing and apply in total at the present time.

Special Comment e Virgin acid refers, in this instance, to a 94 per cent sulfuric acid, 6 per cent water commercial grade sulfuric acid. The PAP - Joliet process requires dissolved metallic ions such as iron to combine with sulfides, etc. and acidity for pH adjustment. The source of metallic ions and one source of acidity is spent pickle liquor or etchant. The quantity of spent pickle liquor or etchant to supply the required metallic ions is insufficient to supply the required acidity. Thus excess pickle liquor or etchant would be required for the necessary acidity and pH change which would also produce an excess amount of filter cake. An alternative to this procedure is to reconstitute the acid strength of the spent pickle liquor or etchant with virgin acid prior to use as a reactant so that the required amounts of dissolved metallic ions for odor control and acid strength for pH adjustment are simultaneously available. This is the process version currently employed by PAP - Joliet.

Special Comment f Spent pickle liquor, spent etchant and recovered oil have been treated as commodities up to the time of this writing. Spent caustic scrubber aqueous solution and filter cake have been managed under the manifest system. If IEPA requires changes in these procedures, PAP will comply.

Special Comment g The property upon which the railroad spur lies belongs to the PAP lessor, Robert Barker. The Rock Island Railroad presumably owns the tracks on the spur line and apparently has an unrecorded easement across the PAP property inasmuch as no record of such easement is available at the Joliet Township assessor's office. PAP neighbors have informed us that the spur has not been used in recent years. The Rock Island Road has also recently encountered financial problems. PAP facilities, including berm and process piping, that cross the railroad spur have been designed so that they may be temporarily removed to accommodate railroad - spur usage.

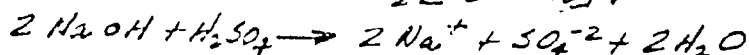
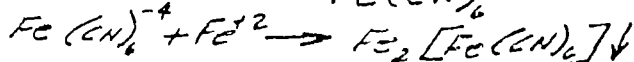
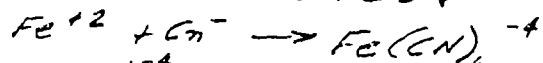
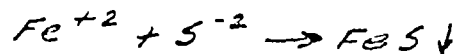
Special Comment h PAP - Joliet can stop the receipt of spent caustic aqueous scrubber solution by means of a phone call to our client, Northern Petrochemical Company, in Morris, Illinois. Since implementing the PAP - Joliet permanent facilities in recent months, PAP has been maintaining additional free storage capacity of approximately 100,000 gallons. ~~WILL BE~~ ?

Special Comment i The two persons who signed the application for site permit were Alfred M. Tenny and Donald E. Matschke. Mr. Tenny is president of By-Products Management, Inc., (BPM) and Dr. Matschke is president of D.E.Matschke Company (DEMC). BPM and DEMC are the two partners owning PAP.

Special Comment j Process effluent is being discharged to the Joliet sewer system consistent with current City of Joliet and IEPA permits. If the Joliet sewer connection was terminated, PAP - Joliet could only cease operations. On two or three occasions in the past, the City of Joliet has requested PAP to stop discharging to the Joliet sewer until an odor situation was explained and rectified or until a construction accident was reported in writing and the circumstances contributing to the accident rectified. These occurrences were rectified to the satisfaction of the City of Joliet within short time periods, thus allowing PAP to resume operations. No such occurrence has taken place since the PAP - Joliet permanent facility has been on line.

Special Comments k and l Refer to attached Analytical Exhibits 1 - 6

Special Comment m



(Copper and other dissolved metals can be substituted for iron with comparable chemistry)

Special Observation n PAP, on advice of legal counsel, has not believed and does not believe their Joliet - PAP process violates any specific Illinois air pollution requirement regardless of whether the process is open or closed. The storage facilities for the spent caustic aqueous scrubber solution does contain a characteristic odor attributable to the small amount of separate

-pec.  
cond?

Special Observation n (continued)

phase oil contained in this stream. To the extent that PAP Joliet storage facilities were not completely closed in earlier months, there occurred occasional odor incidences at the PAP site. These odor incidences have diminished as the temporary facilities have become permanent through the PAP construction program. PAP storage and transfer facilities are completely closed at the time of this writing. PAP inside process tanks and associated piping are closed except during periods of addition of reactants, diatomaceous earth filter-aids and polymer conditioning agents. The PAP piping contractor has been delayed in the final closing of the inside process system due to the slow availability of certain CPVC pipe fittings. While there are, on occasion, some characteristic process odors present inside the PAP processing building, PAP is unaware of any odor complaints in recent weeks. The inside process system will be completely closed within the next week which will remove any remaining significant source of process odors.

Special Observation o

The PAP - Joliet process system has been operating successfully for some weeks now with the regular presence of the PAP owners, employees, construction contractors and other visitors with no attendant health hazards except those attributable to construction and operational accidents. The PAP - Joliet process is now virtually closed and will be completely closed by or before February 20, 1981.

Special Observation p

PAP prepared and filed an air pollution control permit application with IEPA on December 29, 1980. The timetable given for PAP - Joliet construction completion was February 20, 1981 in that application. This application was made over the objections of the PAP legal counsel who advised that PAP - Joliet was not the source of an IEPA - controlled specific air pollution contaminant and was therefore not subject to the permit process.

Special Observation q

To the best of PAP powers of recollection, this flow resulted from a construction accident that occurred a few days earlier. The spilled liquid was recovered by means of a vacuum truck and returned to PAP storage. The spill area was subsequently covered with soil and crushed limestone.

Special Observation r

The PAP - Joliet process is now essentially closed. Thus the sources for the alleged threats to health and safety no longer exist. PAP operations have been free of odor complaints in recent weeks. PAP invites inspection by IEPA of PAP - Joliet facility.

Additional Environmental Concern

The material stored in the PAP storage tanks is primarily water. Floating on top of the water is a thin layer of oil-like material. The oil-like material generates a vapor that will support combustion. A team of construction workers were in the process of welding catwalk brackets to the top of a PAP storage tank without having taken the necessary precaution for providing an inert environment within the vapor space of the tank. This resulted in a momentary vapor-phase combustion in the PAP storage tank which caused two construction workers to fall to the ground. The two workers are on the recovery road.

Additional Environmental Concern (Cont'd)

There was no fire as there is essentially very little to burn. Their injuries were due entirely to their falls. The same construction contractor had been welding on these and other tanks on PAP premises for weeks prior to the accident. Always before, however, suitable provisions had been taken by the contractor to provide inert environments within the tanks. Thus, this was an entirely avoidable construction accident. At no time was there any interference with the nearby interstate highway nor was there a fire to be put-out by the Joliet Fire Department. The PAP - Joliet facility is designed for the presence of the floating, oil-like material in the storage facilities with suitable National Electrical Code electrical and OSHA labeling precautions. Furthermore, except during removal and shipment of the recovered oil, the storage tanks are completely enclosed. A comprehensive electrical grounding system that includes the transport trailer is being installed as a special precaution.

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Please let me know if you have any questions or need additional information.

Sincerely,

*Donald E. Matschke*

Donald E. Matschke, PhD, PE  
President

D.E.MATSCHKE COMPANY, Partner  
PROCESS ALLIANCE PARTNERSHIP

DEM:em, w/6 Exhibits

D.E.MATSCHKE COMPANY  
2 SALT CREEK LANE  
HINSDALE, IL 60521  
312-654-1970

PROCESS ALLIANCE PARTNERSHIP  
608 RAILROAD STREET  
JOLIET, ILLINOIS 60436  
815-722-0900

*Alfred M. Tenny*  
Alfred M. Tenny, President  
BY PRODUCTS MANAGEMENT, Inc.

ANALYTIC EXHIBIT 1  
RAW SPENT CAUSTIC

| Sample           |      | 1      | 2      | 3      | 4      | 5      | 6       | 7       | 8             | 91            | 92               | 10     | 11                    |
|------------------|------|--------|--------|--------|--------|--------|---------|---------|---------------|---------------|------------------|--------|-----------------------|
| Lab              |      | Zimpro | Zimpro | Zimpro | Zimpro | Zimpro | ArroLab | ArroLab | Stablex       | As Is ArroLab | Leachate ArroLab | Allied | Avg. 5 samples Kemron |
| Total COD        | g/l  | 20.66  | 29.4   | 26.05  | 18.2   | 40.8   |         |         |               |               |                  |        | 22.15                 |
| Soluble COD      | g/l  | 19.22  |        |        |        |        |         |         | 9.5ugm/gm     |               |                  |        | 5.42                  |
| TOC              | g/l  | 2.68   | 3.81   |        | 1.72   | 9.78   |         |         |               |               |                  |        | .53                   |
| BOD <sub>5</sub> | mg/l | 6614   |        | 5550   | 8380   |        |         |         |               |               |                  |        |                       |
| Total Solids     | g/l  | 131.68 | 100.7  | 87.3   | 80.1   |        |         |         | 11.7%W/W      | 12.14         |                  | 1.3    | 99.32                 |
| Total Volatile   | g/l  |        |        |        |        |        |         |         |               | 3.49          |                  |        | 2.2                   |
| Ash              | g/l  | 127.4  | 81.3   | 86.0   | 78.2   |        |         |         | 97.4%W/W      |               |                  |        |                       |
| Susp. Solids     | g/l  | 0.27   |        | 0.68   | 0.75   |        |         |         |               |               |                  |        |                       |
| Ash              | g/l  | 0.242  |        | 0.132  | 0.41   |        |         |         |               |               |                  |        |                       |
| Flash Point      |      |        |        |        |        |        |         |         | 60°C          | 100°C         |                  | 200°   |                       |
| Total Sulfur     | g/l  | 5.8    | 7.72   | 4.75   | 7.35   | 7.24   | 0.353%  | 0.304%  |               |               |                  |        | .086                  |
| Sulfate Sulfur   | g/l  |        |        |        |        |        |         |         |               |               |                  |        |                       |
| Sulfide Sulfur   | ppm  | 5.8g/l |        | 4.34   |        |        |         |         | 5.8           | 2.1           |                  |        |                       |
| Viscosity        | cps  |        |        |        |        |        | 1.5     | 1.5     |               |               |                  |        |                       |
| Oil              |      | 12.7   | 12.2   | 12.8   | 12.4   | 12.4   |         |         | 13.57         | 10.8          |                  | 10.6   | 14.00                 |
| Sp. Gravity      |      | 1.106  | 1.067  |        | 1.062  | 1.058  |         |         | 1.05          |               |                  |        |                       |
| Density 25°C @   | g/l  |        |        |        |        |        | 1076    | 1081    |               |               |                  |        |                       |
| Nitrogen         | g/l  | 0.027  |        |        |        |        |         |         |               |               |                  |        |                       |
| Ammonia Nitrogen | g/l  | 0.004  |        |        |        |        |         |         |               |               |                  |        |                       |
| Soluble Chloride | g/l  | 1.153  |        | 0.98   | 787    |        |         |         |               |               |                  |        |                       |
| Organic Carbon   | mg/l |        |        |        |        |        | 1185    | 1111    |               |               |                  |        | 6825                  |
| Oil & Grease     | mg/l | 66     |        |        |        |        | 1980    | 1400    |               |               |                  |        |                       |
| Ala              | g/l  | 54.3   | 34.50  | 35.2   | 33.0   | 30.8   |         |         |               |               |                  |        |                       |
| Ca               | mg/l | 19     |        |        |        |        |         |         |               |               |                  |        |                       |
| Mg               | mg/l | 2.5    |        |        |        |        |         |         |               |               |                  |        |                       |
| CO <sub>2</sub>  | g/l  | 11.26  | 18.81  | 11.26  | 11.07  |        |         |         |               |               |                  |        |                       |
| Br               |      |        |        |        |        |        |         |         | 0.7ugm/gm     | < 2.5         | < 0.5            | .13    |                       |
| Cr               |      |        |        |        |        |        |         |         | < 0.5ugm/gm   | 2.0           | 0.6              | .21    |                       |
| Cu               |      |        |        |        |        |        |         |         | < 0.5ugm/gm   | 2.0           | 0.9              | 1.1    |                       |
| Iron             |      |        |        |        |        |        |         |         | < 0.5ugm/gm   |               |                  |        |                       |
| Lead             |      |        |        |        |        |        |         |         | < 0.5ugm/gm   | < 20          | < 4              | .75    |                       |
| Nickel           |      |        |        |        |        |        |         |         | < 0.5ugm/gm   | < 10          | < 2              | .67    |                       |
| Silver           |      |        |        |        |        |        |         |         | 0.4ugm/gm     |               |                  |        |                       |
| Zinc             |      |        |        |        |        |        |         |         | 0.6ugm/gm     | 3.0           | 0.9              | 3.45   |                       |
| Mercury          |      |        |        |        |        |        |         |         | < 0.002ugm/gm | < 2           | < 2.3            | 12.0   |                       |
| Arsenic          |      |        |        |        |        |        |         |         | < 0.05ugm/gm  | 132.6         | 3.19             | .04    |                       |
|                  |      |        |        |        |        |        |         |         | < 0.05ugm/gm  |               |                  |        |                       |

ANALYTIC EXHIBIT 1 (CONT)

| Weight Percent                  | 1    | 2    | 3    | 4    | 5    | 6     | 7     | 8         | 9 <sup>1</sup> | 9 <sup>2</sup> | 10  | 11   |
|---------------------------------|------|------|------|------|------|-------|-------|-----------|----------------|----------------|-----|------|
| Solids                          | 11.9 | 9.44 | 7.94 | 7.54 |      |       |       |           |                |                |     |      |
| NaOH                            | 2.43 | 1.90 | 1.38 | 1.74 | 1.45 | 4.7   | 4.4   |           |                |                |     | 5.35 |
| Na <sub>2</sub> S               | 1.28 | 1.76 | 1.05 | 1.69 | 1.67 | 0.79  | 0.68  |           |                |                |     | 0.36 |
| Na <sub>2</sub> CO <sub>3</sub> | 6.36 | 2.54 | 4.12 | 2.55 | 2.52 | 3.34  | 2.82  |           |                |                |     | 4.87 |
| Na <sub>2</sub> SO <sub>4</sub> |      |      |      |      |      | 0.014 | 0.093 |           |                |                |     |      |
| NaCN                            |      |      |      |      |      |       |       |           |                |                |     |      |
| Cyanide (Total)                 |      |      |      |      |      |       |       | 201ugm/gm | <1.0           |                | .05 |      |
| Cyanide (Free)                  |      |      |      |      |      |       |       | 135ugm/gm |                |                |     |      |

100% Na<sub>2</sub>S

D. E. Matschke Company  
 2 Salt Creek Lane  
 Hinsdale, IL 60521  
 Mr. Don Matschke

Date June 10, 1980

p. 1 of 2

| NO. | DATE | SAMPLE DESCRIPTION |
|-----|------|--------------------|
|     |      | Effluent to sewer  |
|     |      |                    |
|     |      |                    |
|     |      |                    |
|     |      |                    |

| ANALYSIS            | TEST # | CRITERIA          |  |  |  |  |  |
|---------------------|--------|-------------------|--|--|--|--|--|
| pH, pH units        |        | 9                 |  |  |  |  |  |
| BOD                 |        | 170 to 500        |  |  |  |  |  |
| COD                 |        | 600 to 2000       |  |  |  |  |  |
| Phenol              |        | 0.3 to 1.2        |  |  |  |  |  |
| Total Cyanide       |        | 0.02              |  |  |  |  |  |
| Suspended Solids    |        | None              |  |  |  |  |  |
| Total Solids        |        | 30,000 to 100,000 |  |  |  |  |  |
| Volatile Solids     |        | 1000 to 2400      |  |  |  |  |  |
| Fats, Oil, Grease   |        | 40 to 80          |  |  |  |  |  |
| Ammoniacal Nitrogen |        | 5 to 175          |  |  |  |  |  |
| Copper              |        | 0.03 to 0.6       |  |  |  |  |  |
| Chromium            |        | 0.01 to 0.7       |  |  |  |  |  |
| Chromium            |        | 0.01 to 0.7       |  |  |  |  |  |
| Zinc                |        | 0.09 to 0.60      |  |  |  |  |  |
| Nickel              |        | 0.05 to 1.3       |  |  |  |  |  |
| Iron                |        | 0.7 to 10         |  |  |  |  |  |
| Lead                |        | 0.3 to 0.5        |  |  |  |  |  |

REMARKS:

DATE

*Charles D. Anderson*



Mr. Don Matschke

Date June 10, 1980

p. 2 of 2

[illegible]

1. *Phragmites* (Common Reed)

Charles D. Givens, II

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY  
DIVISION OF WATER POLLUTION CONTROL  
PERMIT SECTION  
Springfield, Illinois 62706

SCHEDULE N WASTE CHARACTERISTICS

1. Name of Project SPENT CAUSTIC PROCESSING, PAP PROCESS

2. FLOW DATA

EXISTING

PROPOSED-DESIGN

2.1 Average Flow (gpd)

NOT APPLICABLE

20,000 - 40,000

2.2 Maximum Daily Flow (gpd)

"

60,000

2.3 TEMPERATURE

| Time of year | Ave. Intake Temp. F | Avg. Effluent Temp. F | Max. Intake Temp. F | Max. Effluent Temp. F | Max. Temp. Outside Mixing Zone F |
|--------------|---------------------|-----------------------|---------------------|-----------------------|----------------------------------|
| SUMMER       | <u>75</u>           | <u>75</u>             | <u>90</u>           | <u>90</u>             | <u>NOT APPLICABLE</u>            |
| WINTER       | <u>50</u>           | <u>50</u>             | <u>65</u>           | <u>65</u>             | <u>"</u>                         |

2.4 Minimum 7-day, 10-year flow: NOT APPLICABLE MGD.

2.5 Dilution Ratio: NOT APPLICABLE

2.6 Stream flow rate at time of sampling NOT APPLICABLE cfs MGD.

3. CHEMICAL CONSTITUENT Existing Permitted Conditions           ; Existing conditions           ; Proposed Permitted Conditions           .

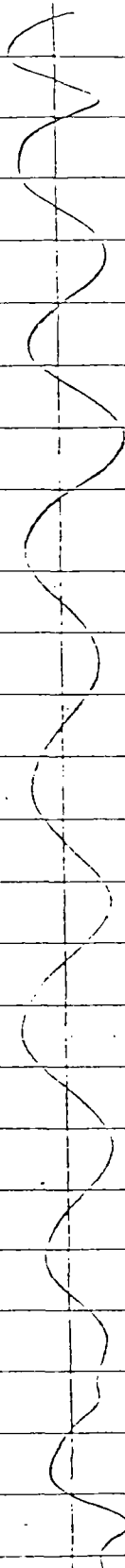
Type of sample: ✓ grab (time of collection 1/80 - 6/80);            composite (Number of samples per day           )

(see instructions for analyses required)

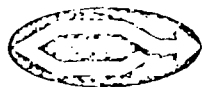
\*RESULTS TYPICALLY DERIVED FROM FIVE (5) OR MORE GRAB SAMPLES

| Constituent                                | RAW WASTE (mg/l)  | TREATED EFFLUENT Avg. (mg/l) Max. | UPSTREAM DOWNSTREAM SAMPLES (mg/l) (mg/l) |
|--|-------------------|-----------------------------------|---|
| Ammonia Nitrogen (asN)                     | <u>0 - 350</u>    | <u>10 - 175</u>                   | <u>NOT APPLICABLE</u>                     |
| Arsenic (total)                            | <u>NTF</u>        | <u>0.08 - 0.1</u>                 | }   |
| Barium                                     | <u>NTF</u>        | <u>NTF</u>                        |   |
| Boron                                      | <u>NTF</u>        | <u>NTF</u>                        |   |
| BOD <sub>5</sub>                           | <u>300 - 1500</u> | <u>64 - 500</u>                   |   |
| Cadmium                                    | <u>0.05-0.1</u>   | <u>0.01 - 0.07</u>                | }   |
| Carbon Chloroform Extract                  | <u>NTF</u>        | <u>NTF</u>                        |   |
| Chloride                                   | <u>NTF</u>        | <u>NTF</u>                        |   |
| Chromium (total <del>hexavalent</del> )    | <u>1.1-12</u>     | <u>&lt;0.05 - 0.7</u>             |   |
| Chromium (total trivalent)                 | <u>NTF</u>        | <u>NTF</u>                        | }   |
| Copper                                     | <u>2.5-13</u>     | <u>&lt;0.1 - 0.6</u>              |   |
| Cyanide (total)                            | <u>4</u>          | <u>0.02 - 1.2</u>                 |   |
| Cyanide (readily released @150°F & pH 4.5) | <u>0.03</u>       | <u>0.005 - 0.01</u>               |   |
| Dissolved Oxygen                           | <u>NTF</u>        | <u>NTF</u>                        | }   |
| Fecal Coliform                             | <u>NTF</u>        | <u>NTF</u>                        |   |

NTF - NOT TESTED FOR

|  | MAX. VALUE<br>(mg/l)                     | TREATED EFFLUENT<br>Avg. (mg/l), Max.    | UPSTREAM<br>(mg/l)   | DOWNSTREAM RANGES<br>(mg/l) |
|--|--|--|--|-----------------------------|
| Fluoride   | NTF                                      | NTF                                      | Not APPLICABLE   |                             |
| Hardness (as Ca CO <sub>3</sub> )                | NTF                                      | NTF                                      |  |                             |
| Iron (total)                                     | 25,000                                   | 0.19 - 10                                |  |                             |
| Lead   | 0.3 - 3                                  | < 0.2 - 0.5                              |  |                             |
| Manganese  | 1  | 0.01 - 0.09                              |  |                             |
| NH <sub>3</sub> S                                | NTF                                      | NTF                                      |  |                             |
| Mercury  | 0.0004 - 0.0012                          | 0.0004 - 0.0012                          |  |                             |
| Nickel   | 15 - 80                                  | < 0.2 - 1.3                              |  |                             |
| Nitrates (as N)                                  | NTF                                      | NTF                                      |  |                             |
| Oil & Grease (hexane solubles<br>or equivalents) | 65 - 130                                 | 8 - 80                                   |  |                             |
| Organic Nitrogen (as N)                          | 27                                       | NTF                                      |  |                             |
| pH   | 1.5 - 12.8                               | 9 - 9.5                                  |  |                             |
| Phenols  | 2  | 0.3 - 1.6                                |  |                             |
| Phosphorous (as P)                               | NTF                                      | NTF                                      |  |                             |
| Radioactivity                                    | NTF                                      | NTF                                      |  |                             |
| Selenium   | < 0.05                                   | < 0.05                                   |  |                             |
| Silver   | 0.1                                      | 0.01 - 0.01                              |  |                             |
| Sulfate  | NTF                                      | NTF                                      |  |                             |
| Suspended Solids                                 | 0  | 0  |  |                             |
| Total Dissolved Solids                           | 50,000 - 150,000                         | 50,000 - 150,000                         |  |                             |
| Zinc   | 6 - 30                                   | < 0.05 - 0.6                             |  |                             |
| Others   |  |  |  |                             |
| POLYNUCLEAR<br>AROMATICS                         | PRELIM. RESULTS<br>ARE NEGATIVE<br>AT 10 | PRELIM. RESULTS<br>ARE NEGATIVE<br>AT 10 |  |                             |
| CHLORINATED<br>BENZENES                          | < 0.1                                    | < 0.1                                    |  |                             |
| MERCAPTANS                                       | NOT EVIDENT<br>TO NOSE                   | NOT EVIDENT<br>TO NOSE                   |  |                             |
|  |  |  |  |                             |
|  |  |  |  |                             |

NTF - NOT TESTED FOR



# APRO Laboratories, Inc.

P.O. Box 686 Canton Farm Road Joliet, Illinois 60434 Telephone (815) 727 5436 Telex 723421 UAR JOL

Attention of Mr. Charles P. Jones P.O. Number 2017-199-30-48  
 Company NORTHERN PETROCHEMICAL CO. Date Received June 3, 1980  
 Address Rt. 6 & Tabler Road Date Completed June 12, 1980  
 City/State/zip Morris, Illinois 60450

| ARRO NO. | SAMPLE DESCRIPTION    | ARRO PICK-UP | ARRO SAMPLING | DATE |
|----------|-----------------------|--------------|---------------|------|
| 54497F   | #2 Sludge Filter Cake |              |               | 6/3  |
|          |                       |              |               |      |
|          |                       |              |               |      |
|          |                       |              |               |      |

## SLUDGE ANALYSIS

|  | 54497<br>As Rec'd | Leachate | ugs leached/<br>gm of dry wt<br>solids |
|--|-------------------|----------|--|
| BOD, 5-day                             |                   |          |  |
| Cadmium                                |                   | <0.5     | <16.                                   |
| COD                                    |                   |          |  |
| Chlorides                              |                   |          |  |
| Chlorine, Total Residual               |                   |          |  |
| Chromium, Hex                          |                   |          |  |
| Chromium, Tri                          |                   |          |  |
| Chromium, Total                        |                   | 0.11     | 3.6                                    |
| Copper                                 |                   | <0.1     | <3.3                                   |
| Cyanide, Total                         | 11.14             |          |  |
| Iron, Total                            |                   | 35       | 1149.                                  |
| Lead                                   |                   | <0.2     | <6.6                                   |
| Nickel                                 |                   | 1.3      | 42.7                                   |
| Nitrogen, Ammonia as N                 |                   |          |  |
| Nitrogen, Organic as N                 |                   |          |  |
| Oils & Grease                          |                   |          |  |
| pH                                     | 10.9              |          |  |
| Phenols                                |                   | 0.077    | 2.53                                   |
| Phosphate, Total (as PO <sub>4</sub> ) |                   |          |  |
| Phosphorus (as P)                      |                   |          |  |
| Solids, Total                          | 30.45%            |          |  |
| Solids, Dissolved                      |                   |          |  |
| Solids, Total Suspended                |                   |          |  |
| Solids, Volatile Suspended             |                   |          |  |
| Sulfate (as SO <sub>4</sub> )          |                   |          |  |
| Zinc                                   |                   | 1.1      | 36.1                                   |
| Alkalinity as CaCO <sub>3</sub>        | 8.88%             |          |  |
| Sulfur                                 | 3.28%             |          |  |
| Sulfide, Water Soluble                 | 4.46              |          |  |
| Arsenic                                |                   | 0.01     | 0.33                                   |
| Cyanide, Free                          | 8.04              |          |  |
| Mercury, ppb                           |                   | 0.22     | 7.2                                    |

### SAMPLE COLLECTION DATA

|                      |  |  |  |  |
|----------------------|--|--|--|--|
| Type of Sampling     |  |  |  |  |
| Sampling pH          |  |  |  |  |
| Sampling Temperature |  |  |  |  |

Results in ug/l unless otherwise indicated

\* See attachment for comments

Illinois EPA Leachate

Analysis certified by A. G. Roketa  
 A. G. Roketa, Manager  
 Environmental Division

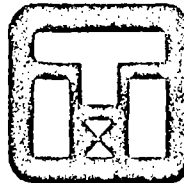
Approved by Terease M. Laciak Date June 16, 1980  
 Laboratory Manager

Testing is in accordance with procedures outlined in the newest editions of:  
 Standard Methods for the Examination of Water and Waste Water  
 ASTM Standards, Part 31, "Water, Atmospheric Analysis"  
 Methods for Chemical Analysis of Water Wastes, EPA Water Quality Office

Report to: B.P.M.  
1150 Junction Ave.  
P.O. Box 231  
Schererville, Indiana 46375

TECHNICAL LABORATORIES DIV OF THX  
5220 East Avenue Countryside, Illinois 60525

ANALYTIC EXHIBIT 5



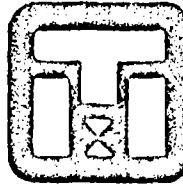
Report Date: 2/4/81

Attn: R. Tenny

| Sample Description | Ferrous Sulfate |  |  |  |  |  |  |
|--------------------|-----------------|--|--|--|--|--|--|
| Parameter          | 3300BP          |  |  |  |  |  |  |
| % Ferrous Iron     | 5.98            |  |  |  |  |  |  |
| Chromium           | 11.20           |  |  |  |  |  |  |
| Copper             | 16.60           |  |  |  |  |  |  |
| Cadmium            | 0.48            |  |  |  |  |  |  |
| Lead               | 5.58            |  |  |  |  |  |  |
| Nickel             | 26.00           |  |  |  |  |  |  |
| Zinc               | 4167            |  |  |  |  |  |  |
| Mercury(ppb)       | -.2             |  |  |  |  |  |  |
| Sodium             | 213             |  |  |  |  |  |  |
| Potassium          | 6.0             |  |  |  |  |  |  |
| Manganese          | 20.0            |  |  |  |  |  |  |
| Silver             | 0.20            |  |  |  |  |  |  |
| Cobalt             | 2.00            |  |  |  |  |  |  |
| Aluminum           | 6.0             |  |  |  |  |  |  |
| Calcium            | 133             |  |  |  |  |  |  |
| Tin                | -.5             |  |  |  |  |  |  |
| Barium             | -.2             |  |  |  |  |  |  |
| Titanium           | -1.0            |  |  |  |  |  |  |
| Beryllium          | 0.08            |  |  |  |  |  |  |

*Handwritten signature*

Report Date: 2/4/81

[illegible]

Aug 19...

Joliet, Illinois 60434

2/4/81

\* Mg/Kg as rec'd.

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